User Guide

Fiber Optic Switcher

FOX T USW 203

Three Input Universal Switcher
with an Integrated Fiber Optic Transmitter

Extron Electronics
INTERFACING, SWITCHING AND CONTROL

68-2226-01 Rev. B
12 14

Safety Instructions

Safety Instructions • English

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ATTENTION: This symbol, ⚠, when used on the product, is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

For information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the Extron Safety and Regulatory Compliance Guide, part number 68-290-01, on the Extron website, **www.extron.com.**

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VORSICHT: Dieses Symbol ⚠ auf dem Produkt soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

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Инструкция по технике безопасности • Русский

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ВНИМАНИЕ: Данный символ, ⚠, если указан на продукте, предупреждает пользователя о наличии важных инструкций по эксплуатации и обслуживанию в руководстве, прилагаемом к данному оборудованию.

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Korean

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안전 가이드라인, 규제 준수, EMI/EMF 호환성, 접근성, 그리고 관련 항목에 대한 자세한 내용은 Extron 웹 사이트(**www.extron.com**)의 Extron 안전 및 규제 준수 안내서, 68-290-01 조항을 참조하십시오.

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. The Class A limits provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference. This interference must be corrected at the expense of the user.

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FDA/IEC 60825-1 Requirements

CLASS 1 LASER PRODUCT

Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 5, dated June 24, 2007.

The product is intended to be used with the fiber optic cables fully installed.

This product meets the applicable requirements of IEC 60825-1, Edition 1 (2007).

Any service to this product must be carried out by Extron Electronics and its qualified service personnel.

NOTE: For more information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the "**Extron Safety and Regulatory Compliance Guide**" on the Extron website.

FDA/IEC 60825-1 Prérequis

Produit laser de classe 1

Conforme aux standards de performance FDA pour les produits laser, sauf pour d'éventuelles modifications, conformément à la « Laser Notice » numéro 5, datant du 24 juin 2007.

Le produit est conçu pour être utilisé avec les câbles fibre optique entièrement installés.

Ce produit répond aux prérequis applicables de l'IEC 60825-1, 1ère Édition (2007).

Si ce produit a besoin d'un quelconque entretient, celui-ci doit être fait par Extron Electronics et son personnel qualifié.

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Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

WARNING: Potential risk of severe injury or death.

AVERTISSEMENT: Risque potentiel de blessure grave ou de mort.

ATTENTION:

- Risk of property damage.
- Risque de dommages matériels.

NOTE: A note draws attention to important information.

TIP: A tip provides a suggestion to make working with the application easier.

Software Commands

Commands are written in the fonts shown here:

```
^AR Merge Scene,,Op1 scene 1,1 ^B 51 ^W^C
[Ø1] R ØØØ4 ØØ3ØØ ØØ4ØØ ØØ8ØØ ØØ6ØØ [Ø2] 35 [17] [Ø3]
Esc X1 * X17 * X20 * X23 * X21 CE ←
```

NOTE: For commands and examples of computer or device responses mentioned in this guide, the character "Ø" is used for the number zero and "O" is the capital letter "o."

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 2Ø8.132.18Ø.48: bytes=32 times=2ms TTL=32
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx –t
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.

Click the **OK** button.

Specifications Availability

Product specifications are available on the Extron website, **www.extron.com**.

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Introduction

This section contains general information about this guide and the FOX T USW 203 Universal Switcher with an integrated fiber optic transmitter, selected device features, and a typical application diagram. Topics in this section include:

- **About this Guide**
- **About the FOX T USW 203 Universal Switcher**
- **Key Features**

About this Guide

This guide describes installation, operation, and control procedures, and reference information for the FOX T USW 203 Universal Switcher with an integrated fiber optic transmitter. In this guide, the terms “FOX T USW 203” and “switcher” are used interchangeably to refer to any model of the FOX T USW 203 Universal Switcher in singlemode or multimode.

About the FOX T USW 203 Universal Switcher

The Extron FOX T USW 203 is a three input universal switcher with an integrated fiber optic transmitter that provides long haul transmission of HDCP-compliant HDMI, RGBHV, or HD component video, stereo audio, and RS-232 signals over fiber optic cabling. It delivers pixel-for-pixel transmission of images up to 1920x1200 and 2K, including HDTV 1080p @ 60 Hz.

To configure and control the FOX T USW 203, connect a computer and enter Simple Instruction Set (SIS) commands (see **SIS Configuration and Control** on page 13) or use the FOX Extenders Control Program (see **FOX Extenders Control Program** on page 21).

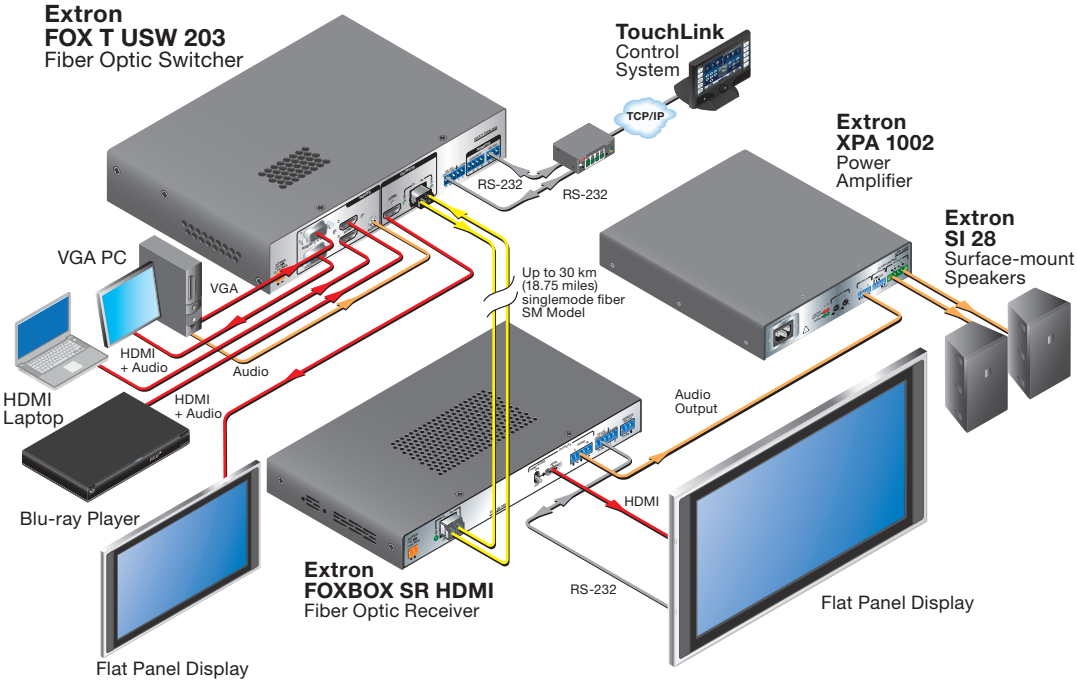


Figure 1. Typical FOX T USW 203 Application

WARNING: Potential risk of severe injury. The FOX T USW 203 outputs continuous invisible light, which may be harmful to the eyes; use with caution.

AVERTISSEMENT: Risque potentiel de blessure grave ou de mort. Le FOX T USW 203 émet une lumière invisible en continu qui peut être dangereux pour les yeux, à utiliser avec précaution.

- Do not look into the rear panel fiber optic cable connectors or into the fiber optic cables themselves.
- Ne regardez pas dans les connecteurs de câble fibre optique sur le panneau arrière ou dans les câbles fibre optique eux-mêmes.

- Plug the attached dust caps into the optical transceivers when the fiber cable is unplugged.
- Branchez les protections contre la poussière dans l'ensemble émetteur/récepteur lorsque le câble fibre optique est débranché.

System Compatibility

The FOX T USW 203 supports Plus or Non-Plus mode transmission for compatibility with FOX receivers. Devices in Plus mode are only compatible with other devices in Plus mode. Use SIS commands (see **Plus mode transmission** on page 19) or the FOX Extenders Control Program (see **Plus Mode Transmission panel** on page 34) to change the mode.

- **Non-Plus** — Supports resolutions from 640x480 up to 1600x1200 @ 60 Hz, including 480p up to 1080p @ 60 Hz. Embedded audio is not supported, but analog audio is supported and HDCP compliant.
- **Plus** — Supports all resolutions supported in non-plus mode, plus 1920x1200 and 2K (2048x1080) @ 60 Hz. Embedded audio and analog audio are supported and are both HDCP compliant.

Supported Receivers	
Plus Mode	**Non-Plus Mode**
FOXBOX Rx DVI Plus	FOXBOX Rx VGA
FOXBOX Rx HDMI	FOXBOX Rx DVI
FOXBOX SR HDMI	FOX 500 DVI Rx
PowerCage FOX Rx DVI Plus	FOX 500 Rx
PowerCage FOX Rx HDMI	PowerCage FOX Rx VGA
PowerCage FOX SR HDMI	PowerCage FOX Rx DVI
FOX II R DP	

Cable Transmission Modes

The switcher is further categorized by the type of fiber optic cable, multimode (MM) or singlemode (SM), which define the effective range of transmission

- **Multimode** — Long distance, up to 2 km (6,560 feet) (depending on the fiber cable)
- **Singlemode** — Very long distance, up to 30 km (18.75 miles)

Key Features

Long distance fiber optics transmission — Transmits HDMI or analog video, stereo audio, and RS-232 signals up to 30 km when using singlemode fiber optic cabling.

Inputs — Include two female HDMI type-A connectors, one RGBHV/RGBS or HD component on 15-pin HD connector, and one unbalanced analog stereo audio on a 3.5 mm stereo mini-jack.

All digital technology — Delivers pixel-for-pixel transmission of video signals to ensure optimal image quality at resolutions up to 1920x1200 and 2K, including HDTV 1080p @ 60 Hz.

Digital conversion of analog video and audio input signals — Digitizes analog signals, ensuring that a reliable, high quality digital video signal is sent to the output destination.

Auto-input switching — Automatically switches to the highest or lowest priority input with an active video signal for simplified operation.

HDCP-compliance

Key Minder — Authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching in professional AV environments, while enabling simultaneous distribution of a single source signal to one or more displays.

EDID Minder — Automatically manages EDID communication between connected devices to ensure that all sources properly power up and reliably display content.

Audio embedding — Converts analog stereo audio signals to digital HDMI audio when the analog input is selected.

Audio gain and attenuation adjustment capability

LED indicators for signal presence, HDCP, and power — Provides a visual indication of system status for real-time feedback and monitoring of key performance parameters.

RS-232 control — Features an RS-232 serial port for control and configuration.

Contact closure remote control availability

Alarm notification for fiber link loss — The FOX T USW 203 can be set up to trigger an external control system for immediate notification when a fiber link has been lost. Requires a second fiber link.

Multimode and singlemode availability — Available as an 850 nm multimode model for long-range transmissions up to 2 km (6,560 feet), and a 1310 nm singlemode model for extreme distances up to 30 km (18.75 miles).

Industry standard LC connectors — Provide reliable physical connectivity and precise fiber core alignment.

Compatibility with the following Extron FOX series:

- **Matrix switchers** — Creates HDCP-compliant signal distribution systems up to 1000x1000 and larger.
- **DisplayPort, HDMI, DVI Plus, DVI, and VGA receivers** — Compatible with FOX series DisplayPort, HDMI, and DVI Plus receivers up to 1920x1200 and 2K, including HDTV 1080p/60. Compatible with FOX series DVI and VGA receivers up to 1600x1200, including HDTV 1080p/60.

NOTE: The FOX T USW 203 is not compatible with the FOX 3G HD-SDI, FOX 3G DVC, or FOX AV models.

Front panel USB configuration port

1U high, half rack width metal enclosure — Compact, low profile enclosure for discreet placement and concealment.

Includes LockIt® HDMI cable lacing bracket

Energy-efficient external universal power supply included — Provides worldwide compatibility, low power consumption, and reduced operating costs.

Installation

This section describes information for connecting and wiring the FOX T USW 203. Topics in this section include:

- **Installation Overview**
- **Rear Panel Features**
- **Connection Details**

Installation Overview

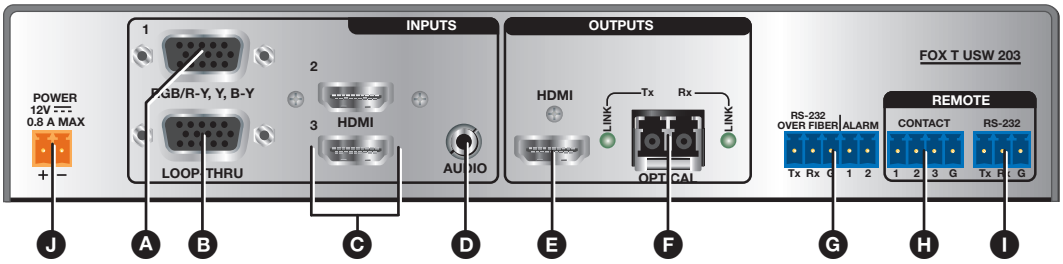
Follow these steps to install and set up an Extron FOX T USW 203 in a fiber optic system:

1. Turn off all of the equipment. Ensure that the video sources and output display are all turned off and disconnected from the power source.

   NOTE: For proper equipment cooling, do not stack units in a rack.

2. Mount the switcher (see **Mounting** on page 38).
3. Connect the cables (see Rear Panel Features below).
4. Configure the switcher (see **SIS Configuration and Control** on page 13 or **FOX Extenders Control Program** on page 21).

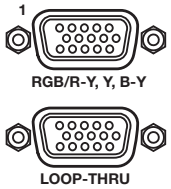
Rear Panel Features



- **A** **Analog video connector** (see page 5)
- **B** **Analog video loop-through connector** (see page 5)
- **C** **HDMI input connectors** (see page 5)
- **D** **Audio input connector** (see page 5)
- **E** **HDMI switched output connector** (see page 5)
- **F** **Fiber optic connector** (see page 6)
- **G** **RS-232 and Alarm Over Fiber connector** (see page 6)
- **H** **Contact closure connector** (see page 7)
- **I** **Remote RS-232 connector** (see page 7)
- **J** **Power connector** (see page 7)

Figure 2. **FOX T USW 203 Rear Panel Features**

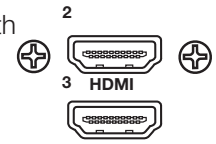
Input Connectors



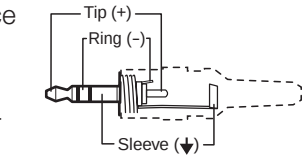
A **Analog video connector** — Connect a video source to the female 15-pin HD connector, labeled input 1 or RGB/R-Y, Y, B-Y.

B **Analog video loop-through connector** — Connect an analog RGB or YUV video display to the female 15 HD VGA connector for a local display of input 1 (VGA). This output is always on.

Selected Video Input	VGA Loop-thru Output
VGA (input 1)	Always on
HDMI (inputs 2 and 3)	N/A



C **HDMI input connectors** — Connect a source device to either or both HDMI connectors (see **Connecting HDMI Connectors** on page 7). These are inputs 2 and 3. They can accept HDMI DVI (with an appropriate adaptor), or dual mode DisplayPort video sources.



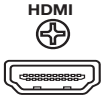
3.5 mm Stereo Plug Connector
(unbalanced)

D **Audio input connector** — Connect an analog audio source to the 3.5 mm tip-ring-sleeve (TRS) connector. All three video inputs can share this audio input.

The following table shows the audio format that is sent over the fiber connection when a specific audio format is not specified (see the **Audio input selection** SIS commands on page 16 to switch the active audio source).

Selected Video Input	HDMI Embedded Audio Present	Analog Audio Present	Audio Sent Over Fiber
VGA	N/A	Yes	Analog audio
VGA	N/A	No	No audio
HDMI	Yes	No	HDMI embedded audio
HDMI	Yes	Yes	HDMI embedded audio
HDMI	No	Yes	Analog audio
HDMI	No	No	No audio

Output Connectors



E **HDMI switched output connector** — Connect a display device to the female type A HDMI output connector for local HDMI output for switched inputs 1, 2, and 3.

Selected Video Input	HDMI Switched Output
VGA (input 1)	On (no embedded audio or HDCP compliance)
HDMI (input 2 and 3)	On

F **Fiber optic connector** — For one-way video, audio, and serial communication from the FOX T USW 203 to a receiver, connect a fiber optic cable between the Tx port on the FOX T USW 203 and the Rx port on a compatible receiver.

To return serial data from a receiver to the FOX T USW 203 or for HDCP compliance, connect a fiber optic cable between the Rx port on the FOX T USW 203 and the Tx port on the receiver.

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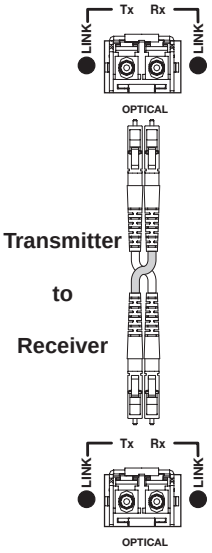
- Plug the attached dust caps into the optical transceivers when the fiber cable is unplugged.
- Branchez les protections contre la poussière dans l'ensemble émetteur/récepteur lorsque le câble fibre optique est débranché.



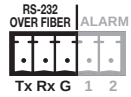
NOTES:

- Ensure that you use the proper fiber optic cable. Typically, singlemode fiber optic cable has a yellow jacket and multimode fiber optic cable has an orange or aqua jacket.
- Only one fiber optic cable, transmitter-Tx-to-receiver-Rx, is required for video, audio, and serial command transmission, but the HDMI signal output on the receiver will not be HDCP-compliant and the FOX T USW 203 will not receive RS-232 reports from the controlled device.

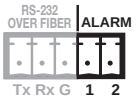
The Link LED indicators light when there is light presence on either fiber optic port.

RS-232 Over Fiber and Alarm Connector

G **RS-232 Over Fiber connector** — To pass serial command signals to a receiver (for serial control of a projector, for example), connect a host device to the transmitter via the leftmost poles (Tx, Rx, and G) of this 5-pole captive screw connector (see **Wiring for RS-232 Over Fiber and Alarm Communication** on page 8 for wiring configurations).



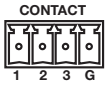
Alarm connector — For remote monitoring of the status of fiber optic link 2, connect a custom or furnished monitoring device to the switcher via the rightmost poles (1 and 2) of this 5-pole captive screw connector (see **Wiring for RS-232 Over Fiber and Alarm Communication** on page 8).



NOTE: Pins 1 and 2 short within the switcher when link 2 does not detect any connection.

Control Connectors

H **Contact closure connector** — Connect a contact closure device (such as a simple switch) to the 3.5 mm, 4-pole captive screw connector. The first three ports are used for selecting inputs 1 through 3 when momentarily shorted to the ground pin (see **Wiring for Remote Contact Closure Communication** on page 9).



I **Remote RS-232 connector** — Connect a host device to the 3.5 mm, 3-pole captive screw connector for serial control of the switcher.

Power Connector

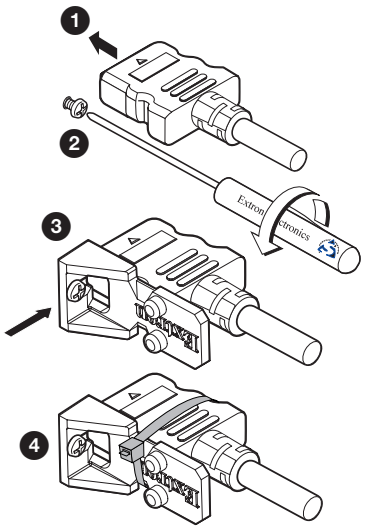
J **Power connector** — Connect an external power supply to the 3.5 mm, 2-pole captive screw connector (see **Wiring the Power Supply** on page 9).

Connection Details

Connecting HDMI Connectors

Use an Extron LockIt lacing bracket to secure an HDMI cable to each device.

1. Plug the HDMI cables into the panel connection (see ❶ of the image to the right).
2. Loosen the side HDMI connection mounting screw from the panel enough to allow the LockIt lacing bracket to be placed over it (see ❷). The screw does not have to be removed.
3. Place the LockIt lacing bracket on the screw and against the HDMI connector, then tighten the screw to secure the bracket (see ❸).



ATTENTION: Do not overtighten the HDMI connector mounting screw. The shield to which it is fastened is very thin and can easily be stripped.

ATTENTION : Ne serrez pas trop la vis de montage du connecteur HDMI. Le blindage auquel elle est attachée est très fin et peut facilement être dénudé.

4. Loosely place the included tie wrap around the HDMI connector and the LockIt lacing bracket (see ❹).
5. While holding the connector securely against the lacing bracket, use pliers or a similar tool to tighten the tie wrap, then remove any excess length.

Wiring for RS-232 Over Fiber and Alarm Communication

The RS-232 Over Fiber port is for transmission of serial signals, such as projector control signals. The alarm port is an internal relay to connect or disconnect a custom alarm circuit. Wire the connector as shown in figure 3 below.

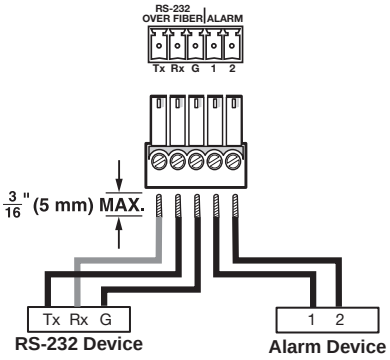


Figure 3. Wiring the RS-232 Over Fiber and Alarm Connector

ATTENTION:
• The length of exposed wires in the stripping process is critical. The ideal length is 3/16 inch (5 mm). • La longueur des câbles exposés est primordiale lorsque l'on entreprend de les dénuder. La longueur idéale est de 5 mm (3/16 inches).
• Any longer and the exposed wires may touch, causing a short circuit between them. • S'ils sont un peu plus longs, les câbles exposés pourraient se toucher et provoquer un court circuit.
• Any shorter and the wires can be easily pulled out even if tightly fastened by the captive screws. • S'ils sont un peu plus courts, ils pourraient sortir, même s'ils sont attachés par les vis captives.

For RS-232 over fiber connection, cross the Tx and Rx lines once between the source and the target.

The alarm pins do not produce any discrete on or off or voltage signals.

NOTES:

- The alarm port does not produce any discrete on or off voltage signals.
- If power is lost or if link 2 optical light is disconnected, lost, or broken, alarm pins 1 and 2 internally short.

Wiring for Remote Contact Closure Communication

Each port senses an external switch or contact closure. Use these ports to select an input on the switcher. Wire the connector as shown in figure 4 below.

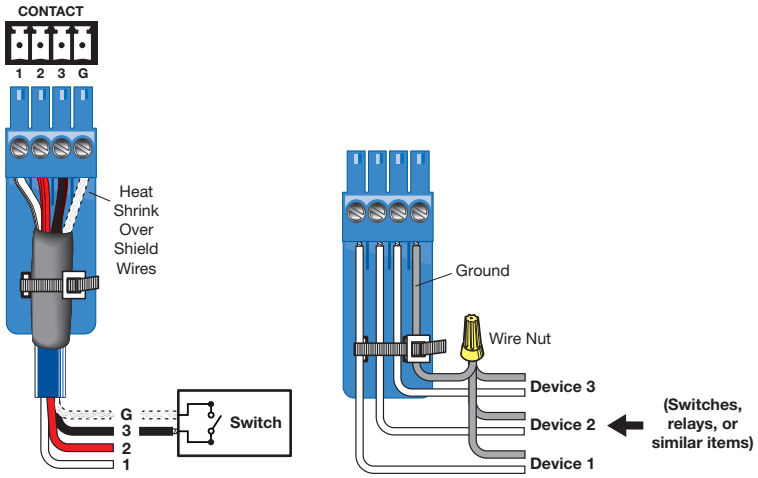


Figure 4. Wiring the Contact Closure Connector

Wiring the Power Supply

Connect a 12 VDC power supply to the 3.5 mm, 2-pole captive screw connector (see figure 5 below for wiring details).

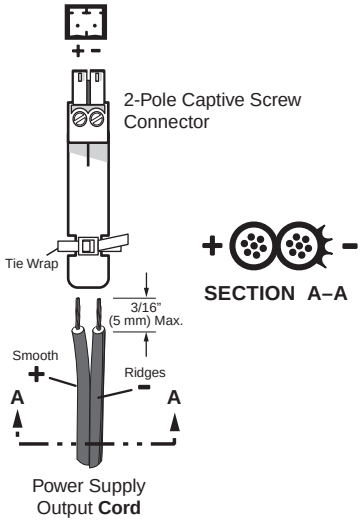


Figure 5. Power Connector Wiring

CAUTION: Electric shock hazard. The wires must be kept separate while the power supply is plugged in. Remove power before wiring.

ATTENTION : Risque de choc électrique : Les deux cordons d'alimentation doivent être tenus à l'écart l'un de l'autre quand l'alimentation est branchée. Couper l'alimentation avant de faire l'installation électrique.

ATTENTION:

- This product is intended to be supplied by a UL Listed Power Unit marked "Class 2" or "LPS," rated 12 VDC, 1.0 A minimum. Always use a power supply supplied by or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the unit.
- Ce produit est destiné à une utilisation avec une source d'alimentation listée UL avec l'appellation « Classe 2 » ou « LPS » et normée 12 Vcc, 1,0 A minimum. Utilisez toujours une source d'alimentation fournie par Extron. L'utilisation d'une source d'alimentation non autorisée annule toute conformité réglementaire et peut endommager la source d'alimentation ainsi que l'unité.

- Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities. The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 725 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to a building structure or similar structure.
- Sauf mention contraire, les adaptateurs AC/DC ne sont pas appropriés pour une utilisation dans les espaces d'aération ou dans les cavités murales. Cette installation doit toujours être en accord avec les mesures qui s'applique au National Electrical Code ANSI/NFPA 70, article 725, et au Canadian Electrical Code, partie 1, section 16. La source d'alimentation ne devra pas être fixée de façon permanente à une structure de bâtiment ou à une structure similaire.

- Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the unit. The ridges on the side of the cord identify the power cord negative lead.
- La polarité de la source d'alimentation est primordiale. Une polarité incorrecte pourrait endommager la source d'alimentation et l'unité. Les stries sur le côté du cordon permettent de repérer le pôle négatif du cordon d'alimentation.

TIP: Do not tin the stripped power supply leads. Tinned wires are not as secure in the captive screw connectors and could be pulled out.

Operation

This section describes the front panel features of the FOX T USW 203 and describes front panel operations. Topics in this section include:

- **Front Panel Features**
- **Front Panel Operation**

Front Panel Features

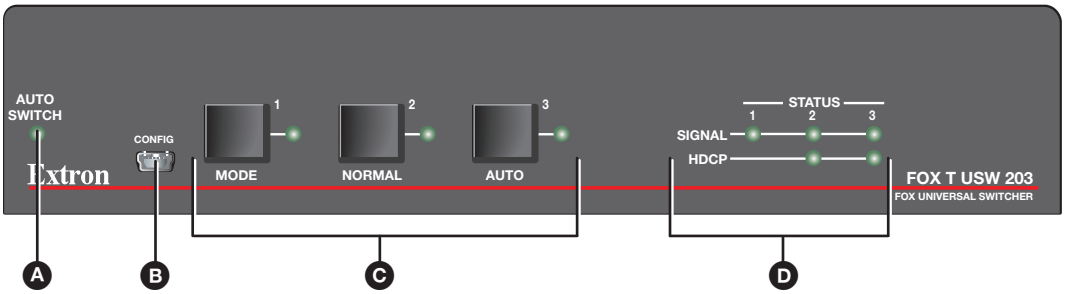


Figure 6. FOX T USW 203 Front Panel Features

A **Auto Switch LED indicator** — Lights when the transmitter is in auto switch mode.

B **Config port** — Connect a host device to the mini USB Config port for remote control.

C **Input selection buttons** — Select inputs 1 through 3 or modes of operation. The corresponding LEDs light to indicate an input is currently active or which mode is currently active.

D **Status LED indicators** — The Signal LEDs light to indicate the signal presence of each input. The HDCP LEDs light when the signal on the corresponding input is HDCP compliant. Input 1 (the VGA connector) does not have an HDCP LED.

Front Panel Operation

The three buttons with corresponding LEDs on the front panel (labeled Mode, Normal, and Auto) are used to manually select inputs 1 through 3 or enable and disable device modes (see the table below). The LEDs indicate status and the currently selected input.

The front panel operations can also be performed remotely with SIS commands (see **SIS Configuration and Control** on page 13) or the FOX Extenders Control Program (see **FOX Extenders Control Program** on page 21).

Initial Power Up

Upon initial power up, all the front panel LEDs blink simultaneously. They blink once for multimode or twice for singlemode. Afterwards, the LEDs return to their normal signal presence indication.

If a different fiber optic SFP module or no SFP module is connected, the LEDs first blink once or twice to identify the device, but then blink continuously.

Selecting an Input

To select an input from the front panel, perform the following actions:

1. Press the input selection button that corresponds with the desired rear panel input connector.
2. The corresponding LED lights to indicate the active input.

Setting the Front Panel Lockout Mode (Executive Mode)

Push and hold (for about 5 seconds) inputs 1, 2, and 3 simultaneously until the front panel LEDs blink three times to enable or disable front panel configuration. In executive mode, contact closure and RS-232 control are still available. By default, executive mode is disabled.

Setting Switch Modes

The FOX T USW 203 operates in two different switch modes: Normal and Auto Switch. In Normal switch mode, select inputs from the front panel manually. In Auto Switch mode, an input is selected automatically based on the active inputs (see the table below for button combinations).

To enable or disable executive, auto switch, or normal switch mode from the front panel, press and hold a combination of input selection buttons simultaneously until the appropriate LEDs blink (see the table below for the different button combinations).

NOTE: Setting audio switch mode to prioritize the lowest numbered active input can be done only with SIS commands (see **Auto switch mode** SIS commands on page 16). Normal switch mode is the default mode.

To enable normal switch mode and disable auto switch mode, push and hold (for about 3 seconds) inputs 1 and 2 until the front panel Auto Switch LED turns off.

Front Panel Button Combinations for Device Modes	
Mode	**Button Combinations**
Auto switch (prioritize the highest numbered active input)	1 and 3
Normal switch (default)	1 and 2

SIS Configuration and Control

This section describes remote control of the FOX T USW 203 through SIS commands and basic installation instructions for the FOX Extenders Control Program (refer to the *FOX Extenders Control Program Help File* for operation details).

To enable serial control of the FOX T USW 203, use a computer running the HyperTerminal or DataViewer utility, or a control system to make serial control of the transmitter. Connect the computer to the FOX T USW 203 through the front panel configuration port or the rear panel RS-232 connector.

The protocol for the RS-232 port is as follows: 9600 baud, no parity, 8 data bits, 1 stop bit, no flow control.

- **Simple Instruction Set Control**
- **Command and Response Tables for SIS Commands**

Simple Instruction Set Control

SIS Programming Guide

Host-to-device and device-to-host communication

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the FOX T USW 203 determines that a command is valid, it executes the command and sends a response to the host device. All responses from the transmitter or receiver to the host end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Device-initiated messages

When a local event occurs, the device responds by sending a message to the host. The device-initiated message may depend on whether the device is multimode or singlemode. They are listed below.

`© Copyright YYYY, Extron Electronics FOX T USW 2Ø3 MM, Vx.xx, 6Ø-123Ø-11`
`© Copyright YYYY, Extron Electronics FOX T USW 2Ø3 SM, Vx.xx, 6Ø-123Ø-12`

YYYY is a four digit year. V*x.xx* is the firmware version number.

`Reconfig`↵
The FOX T USW 203 returns this message when there is any change to the input frequency on the currently selected input.

`1Lnk`X5`•2Lnk`X5`•Vid`X5`•Aud`X5`•`X10`•TX`↵

The FOX T USW 203 returns this status message whenever a change in the fiber link, video, or audio connection occurs. X5 indicates whether the link is present or not present (`Ø` = not present, `1` = present) and X10 represents whether the device is multimode or singlemode (`MM` = multimode, `SM` = singlemode).

Error Responses

When the FOX T USW 203 receives an SIS command and determines that it is valid, it performs the command and sends the corresponding response to the host device. If the command is determined invalid or contains invalid parameters, the transmitter or receiver returns an error response to the host. The error response codes are:

E01 = Invalid input number
E06 = Invalid switch attempt in this mode
E10 = Invalid command
E13 = Invalid parameter
E14 = Not valid for this configuration
E17 = Invalid command for signal type
E22 = Busy

Using the Command and Response Table for SIS Commands

The **Command and Response Tables** begin on page 16. Lowercase letters are acceptable in the command field except where indicated. Figure 7 shows the hexadecimal equivalent of ASCII characters used in the command and response tables.

Space →

ASCII to Hex Conversion Table										Esc	1B	CR	0D	LF	0A
	20	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
0	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	40	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	60	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F

Figure 7. ASCII to Hexadecimal Conversion

Symbol Definitions

↵ = Carriage return and line feed
¦ or ← = Carriage return with no line feed
• = Space
Esc or W = Escape key

X27 = EDID output resolution and refresh rate — See the tables below

VGA - PC								
SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)
1	800x600	60	7	1360x768	60	12	1600x1200	60
2	1024x768	60	8	1366x768	60	13	1680x1050	60
3	1280x720 (analog default)	60	9	1400x1050	60	14	1920x1080	60
4	1280x768	60	10	1440x900	60	15	1920x1200	60
5	1280x800	60	11	1600x900	60	16	2048x1080	60
6	1280x1024	60						

DVI - PC								
SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)
17	800x600	60	23	1360x768	60	28	1600x1200	60
18	1024x768	60	24	1366x768	60	29	1680x1050	60
19	1280x720	60	25	1400x1050	60	30	1920x1080	60
20	1280x768	60	26	1440x900	60	31	1920x1200	60
21	1280x800	60	27	1600x900	60	32	2048x1080	60
22	1280x1024	60						

HDMI - PC with 2-channel Audio								
SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)
33	800x600	60	38	1360x768	60	43	1600x1200	60
34	1024x768	60	39	1366x768	60	44	1680x1050	60
35	1280x768	60	40	1400x1050	60	45	1920x1080	60
36	1280x800	60	41	1440x900	60	46	2048x1080	60
37	1280x1024	60	42	1600x900	60			

HDMI HDTV								
SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)
47	480p 2-ch audio	60	50	720p 2-ch audio (digital default)	60	53	1080p 2-ch audio	50
48	576p 2-ch audio	50	51	1080i 2-ch audio	50	54	1080p 2-ch audio	60
49	720p 2-ch audio	50	52	1080i 2-ch audio	60			

Input Assignments		Save EDID			
SIS Value	Resolution	SIS Value	Resolution	SIS Value	Resolution
55	VGA user assigned or imported 1	58	VGA Loop-thru EDID	61	HDMI switched output EDID 3
56	HDMI 1 user assigned or imported 2	59	HDMI switched output EDID 1	62	HDMI switched output EDID 4
57	HDMI 2 user assigned or imported 3	60	HDMI switched output EDID 2		

Command and Response Tables for SIS Commands

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Input Switching Commands			
Input selection			
NOTE: The FOX T USW 203 saves the last input selection when cycling power.			
Set video input selection	X11 !	In X11 •All ↵	Select input X11.
View video input selection	!	X11 ↵	View currently selected source.
Auto switch mode			
Disable auto switch mode	Esc ØAUSW ←	AuswØ ↵	Switch inputs manually (default).
Set priority to the highest active input	Esc 1AUSW ←	Ausw1 ↵	Gives priority to the highest numbered active input.
Set priority to the lowest active input	Esc 2AUSW ←	Ausw2 ↵	Gives priority to the lowest numbered active input.
View auto switch setting	Esc AUSW ←	X12 ↵	View the auto switch mode.
Audio Configuration Commands			
Audio gain and attenuation			
NOTE: The gain (G) and attenuation (g) commands are case-sensitive. The audio level commands are not case-sensitive.			
Set gain	X7 G	Aud X9 ↵	Set gain to X9 dB.
Set attenuation	X8 g	Aud X9 ↵	Set attenuation to X9 dB.
Increment audio level	+G or +g	Aud X9 ↵	Increase audio level by 1 dB.
Decrement audio level	-G or -g	Aud X9 ↵	Decrease audio level by 1 dB.
View audio level	G or g	X9 ↵	View the current audio level in dB.
Audio input selection			
Set audio input format	Esc I X11 * X26 AFMT ←	AfmtI X11 * X26 ↵	Set the format of input X11 to X25.
View audio input format	Esc I X11 AFMT ←	X26 ↵	View the format of input X11.

NOTE:

X7 = Audio gain — Ø to 1Ø

X8 = Audio attenuation — –18 to Ø

X9 = Audio level — –18 to +1Ø

X11 = Input selection
- 1 = VGA (input 1)
- 2 = HDMI (input 2)
- 3 = HDMI (input 3)

X12 = Auto switch mode
- Ø = manual switching (default)
- 1 = priority to the highest numbered input
- 2 = priority to the lowest numbered input

X26 = Audio input format
- Ø = auto (default)
- 1 = digital embedded
- 2 = analog

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Picture Adjustments Commands (Analog Only)			
Pixel phase			
Set a pixel phase value	Esc 1*X23PHAS←	PhasX23↵	Adjust the pixel phase to X23.
Increment value	Esc 1+PHAS←	PhasX23↵	Increase the pixel phase.
Decrement value	Esc 1-PHAS←	PhasX23↵	Decrease the pixel phase
View pixel phase value	Esc 1PHAS←	X23↵	Show the pixel phase value
Total pixels			
Set the total pixel value	Esc 1*X24TPIX←	TpixX24↵	Set the total pixels to X24.
Increment value	Esc 1+TPIX←	TpixX24↵	Increase the total pixels.
Decrement value	Esc 1-TPIX←	TpixX24↵	Decrease the total pixels.
View total pixel value	Esc 1TPIX←	X24↵	Show the total pixels.
Horizontal start			
Set horizontal start value	Esc 1*X25HSRT←	HsrtX25↵	Set horizontal location of first active pixel in active window.
Increment value	Esc 1+HSRT←	HsrtX25↵	Move the image to the right.
Decrement value	Esc 1-HSRT←	HsrtX25↵	Move the image to the left.
View horizontal start value	Esc 1HSRT←	X25↵	Show horizontal location of the first active pixel in active window.

NOTE:	X23 = Pixel phase	Ø to 63 (32 = default)
	X24 = Total pixels	±255 of the default value (depends on the input rate)
	X25 = Horizontal start	Ø to 255 (128 = default)

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
EDID Commands			
NOTE: Digital EDID can be assigned only to a digital input. Analog EDID can be assigned only analog input 1.			
Input EDID (VGA and HDMI)			
Assign factory EDID	Esc A X11 * X27 EDID ↵	EdidA X11 * X27 ↵	Set the EDID resolution and refresh for input X11.
View assigned EDID	Esc A X11 EDID ↵	X27 ↵	View EDID resolution and refresh for input X11.
Save EDID	Esc S X15 EDID ↵	EdidS X15 ↵	Save VGA loop-through or HDMI switched output EDID to user location X15.
View EDID native resolution	Esc N X11 EDID ↵	X2 ↵	View native resolution.
View current EDID in Hex	Esc R X11 EDID ↵	X3 ↵	View EDID in Hex format.
Export EDID selection	Esc E X27 EDID ↵	X4	Export EDID in binary format.
Import EDID	Esc I X14 EDID ↵ X4	EdidI X14 ↵	Import EDID in binary format to user stored EDID slot X14.
Advanced Configurations Commands			
Input sync detection (VGA only)			
View input sync detection	Esc 1LS ↵	xxx.x,xxx.x ↵	Shows horizontal frequency in kHz and vertical frequency in Hz. Returns ØØØ.Ø,ØØØ.Ø if no signal is detected.
Input video format (VGA only)			
Set input video format	1* X16 \	Typ1* X16 ↵	Sets input 1 to format X16.
View input video format	1 \	X16 ↵	View input 1 video format.

NOTE:

X2 = Native resolution and refresh rate

X3 = EDID record (Hex) — 128 or 256 bytes

X4 = EDID record (binary) — 128 or 256 bytes

X11 = Input selection
- 1 = VGA (input 1)
- 2 = HDMI (input 2)
- 3 = HDMI (input 3)

X14 = User assigned EDID
- 55 = VGA user assigned input 1
- 56 = HDMI user assigned input 2
- 57 = HDMI user assigned input 3

X15 = Save EDID
- 58 = VGA loop-thru output EDID
- 59 = HDMI switched output EDID 1
- 6Ø = HDMI switched output EDID 2
- 61 = HDMI switched output EDID 3
- 62 = HDMI switched output EDID 4

X16 = Input video format
- Ø = auto detect (default)
- 1 = RGB
- 2 = YUV

X27 = EDID output resolution — See the tables on page 15.

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Front panel lockout			
Set front panel executive mode	X5X	ExeX5↵	Enable or disable (default) the front panel lockout (executive) mode.
View front panel executive mode	X	X5↵	View the front panel lockout (executive) mode.
Plus mode transmission			
Disable Plus mode transmission	81*Ø#	PlusØ↵	Disable Plus mode transmission.
Enable Plus mode transmission	81*1#	Plus1↵	Enable Plus mode transmission (default).
View Plus mode transmission	81#	X5↵	View Plus mode transmission setting.
HDCP authorized device (HDMI inputs only)			
HDCP authorized device on	EscEX11*1HDCP←	HdcpEX11*1↵	HDCP authorized device on for input X11 (default).
HDCP authorized device off	EscEX11*ØHDCP←	HdcpEX11*Ø↵	HDCP authorization off for input X11.
Query HDCP authorization status	EscEX11HDCP←	X6↵	View the HDCP authorization status.
HDCP status (HDMI inputs only)			
Query HDCP status	EscIX11HDCP←	X13↵	Query the HDCP status of the current input.
Device name			
NOTE: No blank or space characters are permitted. The first character must be a letter. The last character cannot be a minus or hyphen.			
Set unit name	EscX17CN←	Ipn●X17↵	Set device name.
Set unit name to factory default	Esc●CN←	Ipn●X18↵	Set device to default.
View unit name	EscCN←	X17↵	View device name.

NOTE:

X5 = On or off	Ø = off or not detected 1 = on or detected
X6 = HDCP authorization	Ø = HDCP authorization off 1 = HDCP authorization on (default)
X11 = Input selection	2 = HDMI (input 2) 3 = HDMI (input 3)
X13 = HDCP status (HDMI only)	Ø = no source device detected 1 = source detected with HDCP 2 = source detected but no HDCP is present
X17 = Unit name	Text string up to 24 characters (A-Z, Ø-9, -)
X18 = Extron device name	FOX-T-USW-2Ø3

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Information requests			
Query general information	I	1Lnk X5 ● 2Lnk X5 ● Vid X5 ● Aud X5 ● X10 ● TX ↵	
Query part number	N	6Ø-123Ø-nn ↵	
Query firmware version	Q	x.xx ↵	
Query firmware build	*Q	x.xx.xxxx ↵	
Query all firmware version	ØQ	x.xx.xxxx-x.xx ↵	
Query updated FPGA version	35Q	x.xx ↵	
Status request			
View fiber link 1 status	1S	X5 ↵	
View fiber link 2 status	2S	X5 ↵	
View input video status	3S	X5 X5 X5 ↵	View the on or off status of input 1, 2, and 3.
View input audio status	4S	X5 ↵	
Request all signal status	5S	SigI X5 X5 X5 ● SigO X5 ● 2HdcpI X5 ● 3HdcpI X5 ● HdcpO X5 ↵	
Request HDMI signal status	6S	SigI X5 X5 ● SigO X5 ↵	
Request HDCP status	7S	2HdcpI X5 ● 3HdcpI X5 ● HdcpO X5 ↵	
Internal temperature			
View internal temperature	2ØS	X1 ↵	Internal temperature in degrees Fahrenheit and Celsius.
Factory reset			
System Reset (factory default)	Esc ZXXX ←	Zpx ↵	Resets unit to factory default.
Reset audio gain and attenuation	Esc ZA ←	Zpa ↵	Reset audio gain and attenuation to default levels.
Upload firmware			
Upload firmware	Esc Upload ←	SendHeader ↵	
SFP module			
View SFP module information	4ØS	X19 ● X20 ● X21 ● X22 ↵	

NOTE:

X1 = Internal temperature	In degrees Fahrenheit and Celsius
X5 = On or off	Ø = off or not detected 1 = on or detected
X10 = SFP module type	SM = singlemode MM = multimode
X19 = Vendor or manufacturer name	
X20 = Transmit (Tx) output power	in dBm
X21 = Receive (Rx) optical power	in dBm
X22 = Operation temperature	in ℃

FOX Extenders Control Program

The Extron FOX Extenders Control Program provides an alternate method to control and configure the FOX T USW 203. The application provides controls to adjust device parameters and manage firmware. The FOX T USW 203 can also be configured and controlled with SIS commands (see **SIS Configuration and Control** on page 13).

The Extron FOX Extenders Control Program communicates with the switcher via the rear panel Remote RS-232 port or front panel USB Config port. The program is compatible with Microsoft® Windows® 2000, Windows XP, or later Windows operating systems. Updates to this program can be downloaded from the Extron website (**www.extron.com**). Topics in this section include:

- **Installing the Software**
- **Starting the Software**
- **Using the Software**

Installing the Software

The program is available for download on the Extron **website**.

To download the software from the website:

1. On the Extron website, click the **Download** tab.
2. From the left sidebar, click the **Software** link.
3. Navigate to `FOX Extenders`.
4. Click the **Download** link to the right of the desired device.
5. Submit any required information to start the download. Note where the file is saved.
6. Open the executable (.exe) file from the save location.
7. Follow the instructions that appear on the screen. By default, the installation creates a folder in the Program Files directory for the FOX Extenders Control Program.

Starting the Software

Start the Extron FOX Extenders Control Program as follows:

1. Open the FOX Extenders Control Program. The **Communication Setup** dialog box appears.

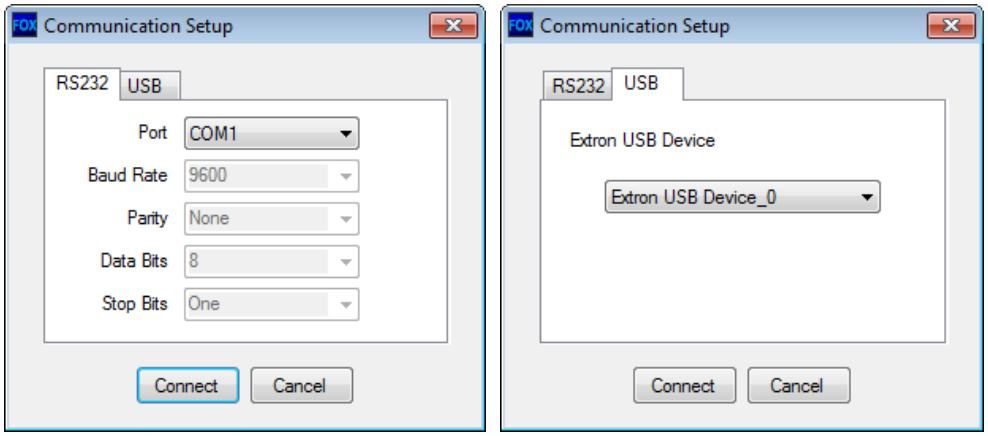


Figure 8. Communication Setup Window Connection Methods

2. Select the desired connection method.
   - To connect the software to the device through the rear panel Remote RS-232 connector, click the **RS232** tab and select the desired port from the **Port** drop-down list (see the left side of figure 8).
   - To connect the software to the device through the front panel USB connector, click the **USB** tab and select the Extron USB device from the **Extron USB Device** drop-down list (see the right side of figure 8).
3. Click the **Connect** button. The FOX Extenders Control Program window appears.

NOTE: Some controls and displays are available only when connected to specific devices.

Using the Software

For more configuration and control details, see the *FOX Extenders Control Program Help File* for configuration and control details. Open the file using one of the following methods:

- Once the FOX Extenders Control Program is open, press the <F1> key on the keyboard.
- Once the FOX Extenders Control Program is open, select **Contents** from the **Help** menu.
- From the Windows Start Menu, select **FOX Extenders Help** from the FOX Extenders Control Program folder.

The main screen opens (see figure 9 on page 23).

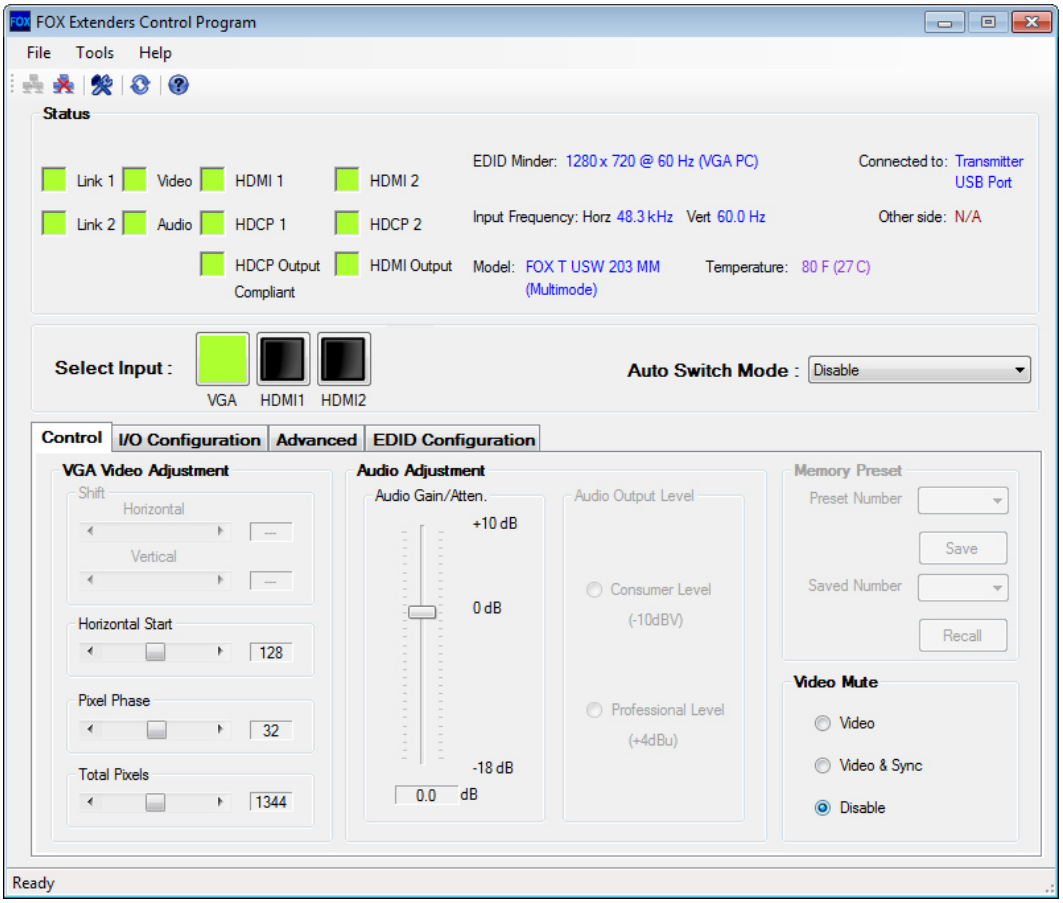


Figure 9. Main Screen

The main screen consists of a menu bar, `Status` panel, `Input` panel, and `Configuration` panel.

Menu Bar

The menu bar consists of three menus for connection options, device information and configuration, and additional resources.

File menu

The `File` menu contains options for connecting and disconnecting the device and exiting the FOX Extenders Control Program.

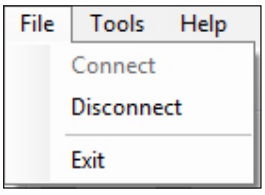


Figure 10. File Menu

NOTE: Options that appear gray are not available.

Connect

The **Connect** option establishes communication with a disconnected device. A disconnected device may include a device that has timed out after prolonged inactivity or a new device that has yet to be connected. If a device is already connected, the **Connect** option is disabled until the device is disconnected or the connection times out.

To establish a connection:

1. From the **File** menu, select **Connect**. Alternatively, click the icon below the menu bar. This displays the Communication Setup dialog box opens (see **figure 8** on page 22).
2. Select the desired connection method.
   - To connect the software to the device through the rear panel Remote RS-232 connector, click the **RS232** tab and select the desired port from the **Port** drop-down list (see the left side of figure 8).
   - To connect the software to the device through the front panel USB connector, click the **USB** tab and select the Extron USB device from the **Extron USB Device** drop-down list (see the right side of figure 8).
3. Click the **Connect** button. The FOX Extenders Control Program window appears.

NOTE: Some controls and displays are available only when connected to specific devices.

Disconnect

The **Disconnect** option stops communication with the current device, but leaves the FOX Extenders Control Program open. Once disconnected, configuration can no longer be done unless connection is re-established.

To disconnect from the device, select **Disconnect** from the **File** menu or click the icon below the menu bar. The status bar at the bottom of the main screen indicates that the device is disconnected.

Exit

The **Exit** option closes the FOX Extenders Control Program.

To exit the program, select **Exit** from the **File** menu.

Tools Menu

The **Tools** menu contains options for displaying device information or configuring the device.

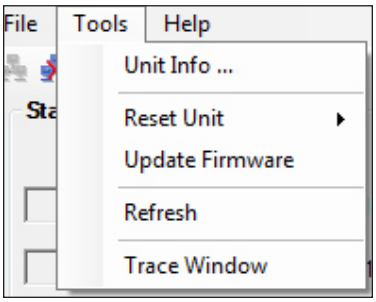


Figure 11. Tools Menu

Unit Info

The `Unit Info` option opens a dialog box with information about the connected device.

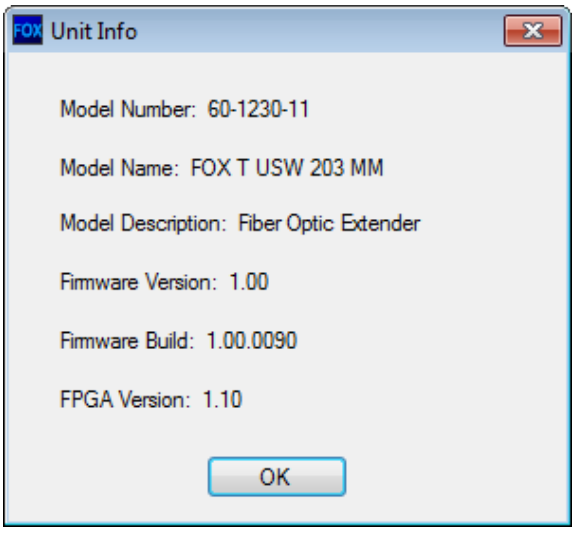


Figure 12. Unit Info Dialog Box

1. From the **`Tools`** menu, select **`Unit Info`**. This opens a dialog box displaying information about the connected unit. The displayed information includes:
   - Model number of the device
   - Name of the device model
   - Description of the model
   - Firmware version currently found on the device
   - Firmware build
   - FPGA version
2. Click the **`OK`** button to close the dialog box and return to the main screen.

Reset Unit

There are three listed reset options:

- Master System Reset
- Audio Gain/Atten. Reset
- Presets Reset

Depending on the chosen reset option, different settings are cleared.

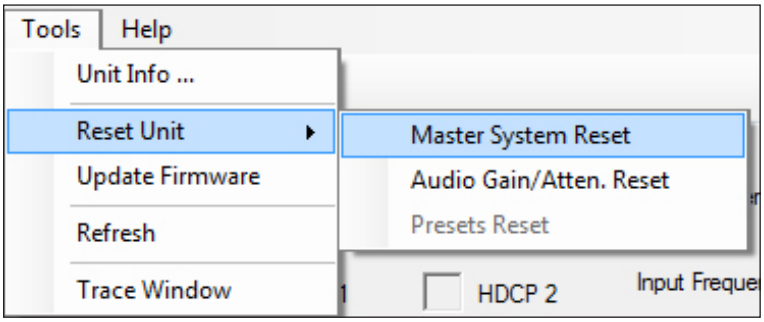


Figure 13. Reset Unit Menu

NOTE: Be careful to select the intended reset option. Selecting the incorrect reset can result in unintended loss of settings.

Master System Reset — Resets all unit settings and user settings to factory defaults.

From the **Tools** menu, locate the **Reset Unit** submenu and select **Master System Reset**.

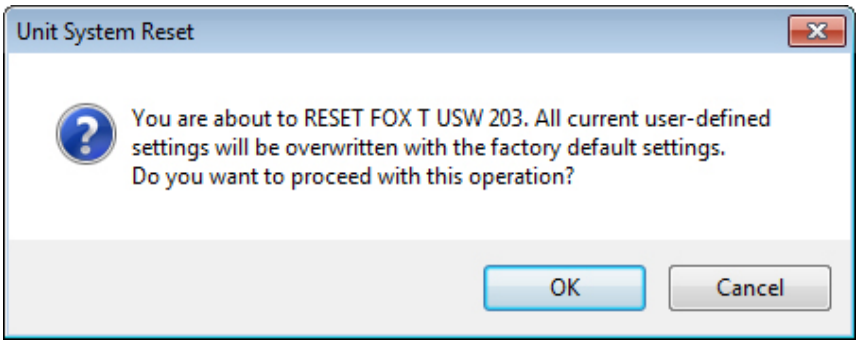

Unit System Reset
You are about to RESET FOX T USW 203. All current user-defined settings will be overwritten with the factory default settings.
Do you want to proceed with this operation?
OK
Cancel

Figure 14. Unit System Dialog Box

Audio Gain/Atten. Reset — Resets the level of audio gain and attenuation to factory defaults.

From the **Tools** menu, expand the **Reset Unit** submenu and select **Audio Gain/Atten. Reset**.

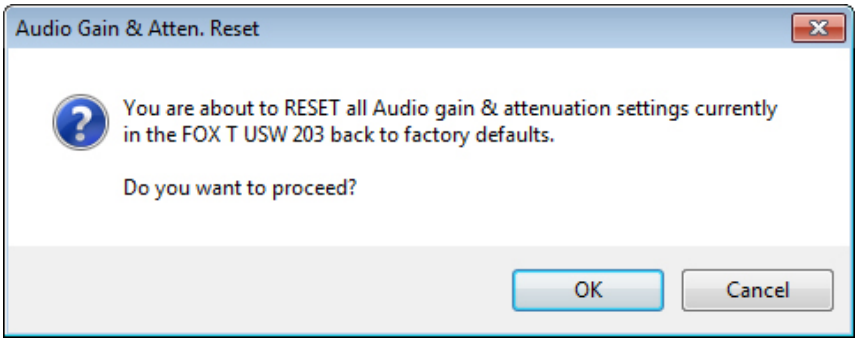

Audio Gain & Atten. Reset
You are about to RESET all Audio gain & attenuation settings currently in the FOX T USW 203 back to factory defaults.
Do you want to proceed?
OK
Cancel

Figure 15. Audio Gain and Attenuation Reset Dialog Box

Presets Reset — Is not available for the FOX T USW 203.

Update Firmware

The **Update Firmware** option opens the Extron Firmware Loader application. This application is used to upload new firmware to the connected device (see **Downloading Firmware** on page 40 to download new firmware).

NOTE: In order for the **Update Firmware** option to work, install the Firmware Loader application (see **Downloading Extron Firmware Loader** on page 39). Otherwise, the **Update Firmware** option is disabled.

To update firmware:

1. From the **Tools** menu, select **Update Firmware** or click the icon below the menu bar. This opens Firmware Loader (if this application is already installed on the connected PC).

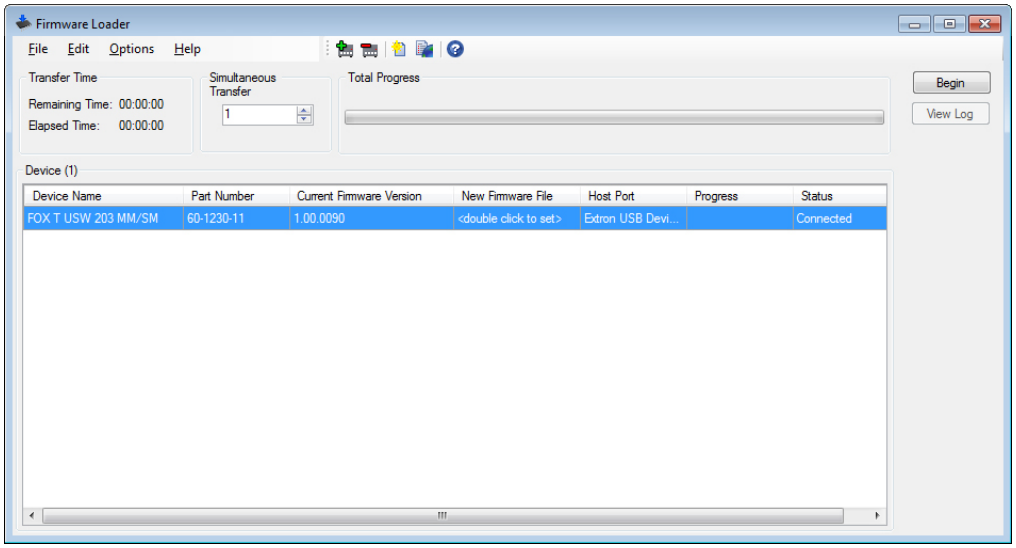


Figure 16. Firmware Loader Interface

2. Upload new firmware (see **Installing Firmware with Firmware Loader** on page 41).

   If necessary, download new firmware from the Extron website (see **Downloading Firmware** on page 40).

3. Exit Firmware Loader.
4. From the **File** menu of the FOX Extenders Control Program, select **Connect** to re-establish communication with the device.
5. Re-enter the connection information in the **Connect** dialog box to re-establish communication with the device.

See the *Firmware Loader Help File* and supporting documentation for further information about using Firmware Loader.

Refresh

The **Refresh** option refreshes the main screen of the FOX Extenders Control Program without restarting the application. This is useful if connection to a device is lost (such as if the unit has been unplugged accidentally) or settings change on the device.

From the **Tools** menu, select **Refresh**. Alternatively, click the icon.

Trace Window

The `Trace Window` option displays data sent to and received from the device in a separate window for troubleshooting.

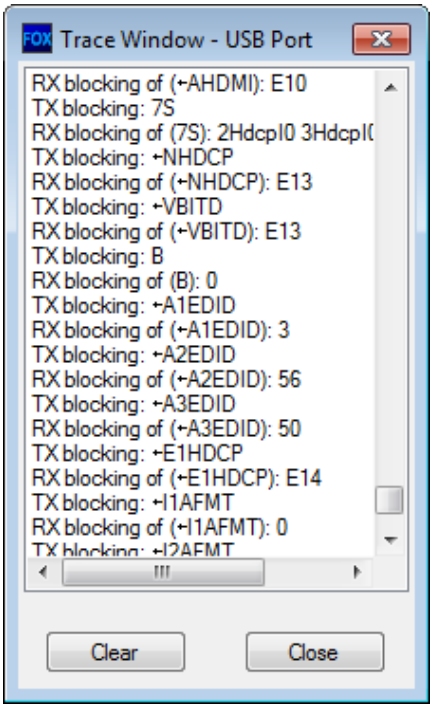


Figure 17. Trace Window Dialog Box

1. From the **`Tools`** menu, select **`Trace Window`**. The `Trace Window` dialog box opens.
2. To clear existing information, click the **`Clear`** button.
3. Click the **`Close`** button to close the `Trace Window` dialog box.

Help Menu

The `Help` menu contains options for additional information and reference material, checking for updates to the FOX Extenders Control Program, and software information.

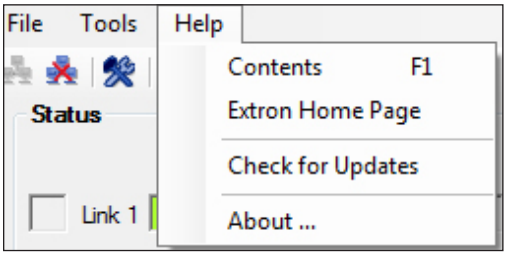


Figure 18. Help Menu

Contents

The `Contents` option launches the FOX Extenders Control Program help file.

Open the help file in one of the following ways:

- From the **`Help`** menu, select **`Contents`**.
- Press <F1> on your keyboard.
- Click the icon to launch the help file.

Extron Home Page

The **Extron Home Page** option displays the Extron website. The Extron website contains supporting documentation for Extron products and downloadable firmware and software updates (see **Downloading Extron Firmware Loader** on page 39).

From the **Help** menu, select **Extron Home Page**. This opens a new Internet browser window to the Extron website.

Check for Updates

The **Check for Updates** option verifies that the latest version of the FOX Extenders Control Program is being used. If there is a new version available, the option to install it becomes available.

From the **Help** menu, select **Check for Updates**.

About...

This option opens a dialog box displaying information about the FOX Extenders Control Program.

1. From the **Help** menu, select **About**. This opens a dialog box displaying information about the FOX Extenders Control Program. The displayed information includes:
   - Name of the application
   - Currently installed software version
   - Software part number
   - Copyright
   - Application description

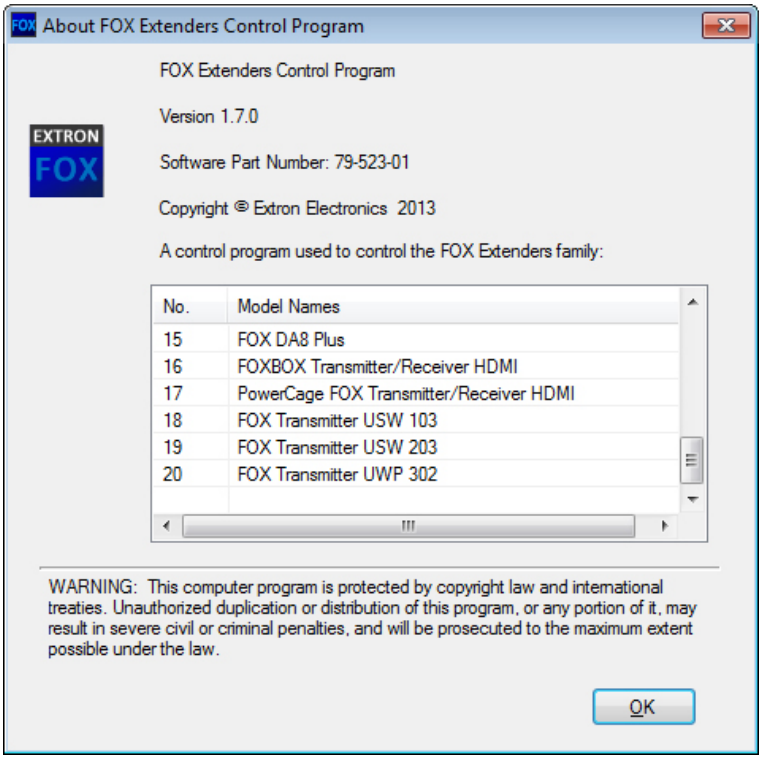

About FOX Extenders Control Program
FOX Extenders Control Program
Version 1.7.0
EXTRON
FOX
Software Part Number: 79-523-01
Copyright © Extron Electronics 2013
A control program used to control the FOX Extenders family:
No.
Model Names
15
FOX DA8 Plus
16
FOXBOX Transmitter/Receiver HDMI
17
PowerCage FOX Transmitter/Receiver HDMI
18
FOX Transmitter USW 103
19
FOX Transmitter USW 203
20
FOX Transmitter UWP 302
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
OK

Figure 19. About FOX Extenders Control Program Dialog Box

2. Click the **OK** button to close this dialog box and return to the main screen of the application.

Main Screen

The main screen contains status information, input selection, and configuration options.

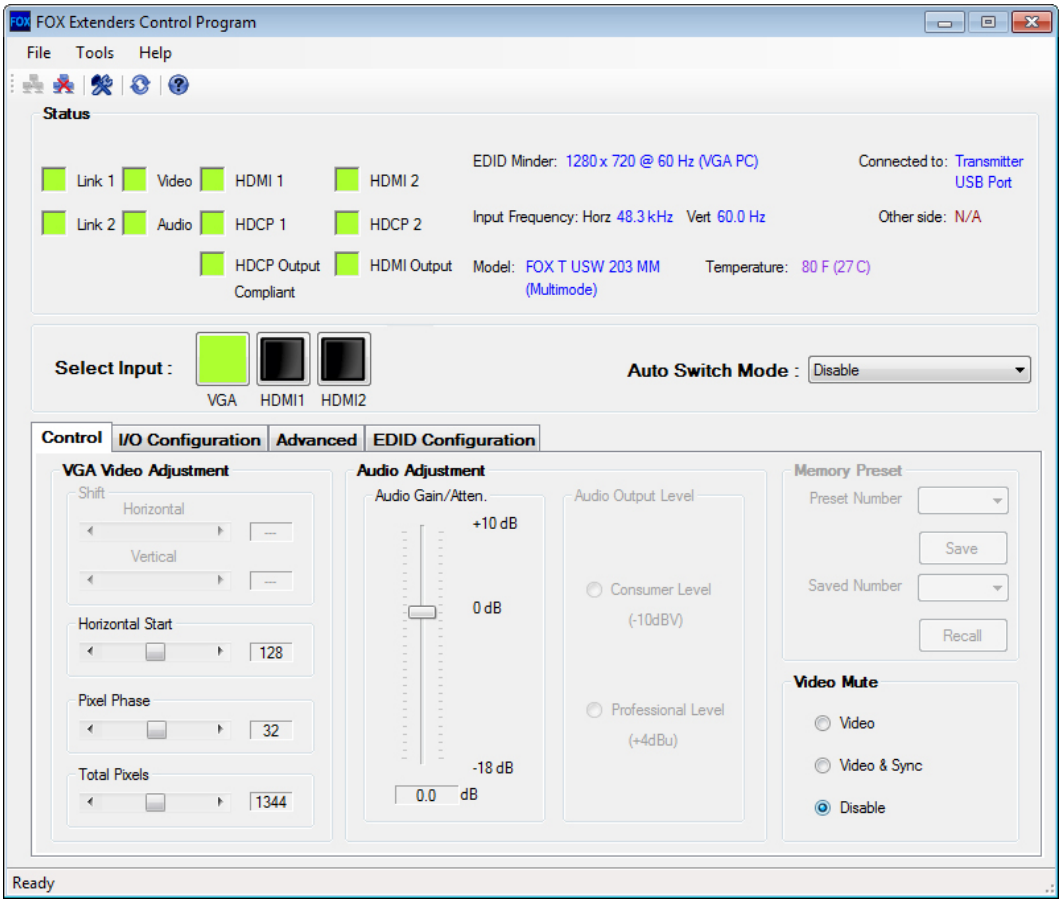


Figure 20. Main Screen

NOTE: The main screen may appear different from the image above depending on what is connected. Functions which are not applicable are disabled.

Status panel

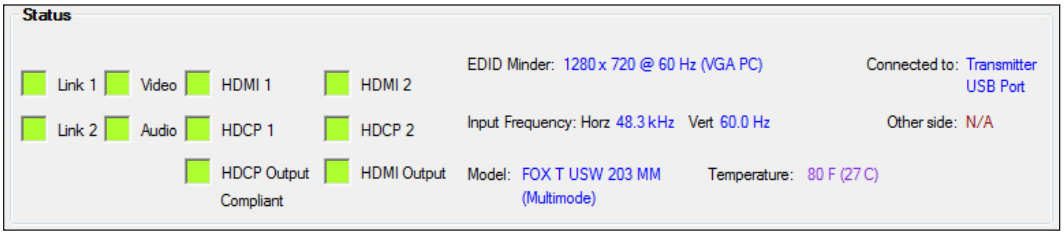


Figure 21. Status Panel

The `Status` panel of the screen provides visual indications of the connection status and the names of the connected units. The following information is displayed:

Link 1 Indicator — Displays green when the receiver detects light on Link 1 (connecting the Tx port of the transmitter to the Rx port of the receiver).

Link 2 Indicator — Displays green when an HDMI transmitter detects light on Link 2 (connecting the Tx port of an HDMI receiver to the Rx port of an HDMI transmitter).

NOTE: For transmission of HDMI video with HDCP content, two fibers are required.

Video Indicator — Displays green when the transmitter detects an active signal on the VGA input.

Audio Indicator — Displays green when the device detects audio with the selected input. If the selected input has an analog audio signal above -44 dBV, the indicator turns green immediately, but turns gray after the audio signal level drops below the threshold continuously for 10 seconds. If the selected input has digital embedded audio, the indicator displays green and remains green as long as the digital audio signal is detected.

HDMI Indicator — Displays green when the unit receives an HDMI input signal.

HDCP Indicator — Displays green if the input signal is HDCP-encrypted.

EDID Minder — Displays the current EDID Minder settings.

Input Frequency — Displays the horizontal and vertical frequencies of the current input. This field indicates No Input Signal if there is no input signal.

Model — Displays the model of the device that is connected via RS-232 or USB.

Connected to — Displays the communication port of the unit that is connected to the PC. This can be either a communication port on the transmitter or a communication port on the receiver.

Other side — Displays `N/A` whenever connected to a FOX T USW 203.

Temperature — Displays the internal temperature of the device.

Input Selection panel

The Input Selection panel is used to select inputs manually or automatically.

Figure 22. Input Selection Panel

Select Input — Select the desired input. The currently selected input is green. The left button represents Input 1 (VGA). The right button represents Input 2 (HDMI).

Auto Switch Mode — Allows the device to auto switch inputs based on the chosen configuration. The options are **`Disabled`**, **`Priority to Highest Active`**, or **`Priority to Lowest Active`**.

NOTE: The Default setting on the FOX T USW 203 is **`Disabled`**.

Control tab

The `Control` tab contains picture and audio adjustments. To access these options, click the **`Control`** tab.

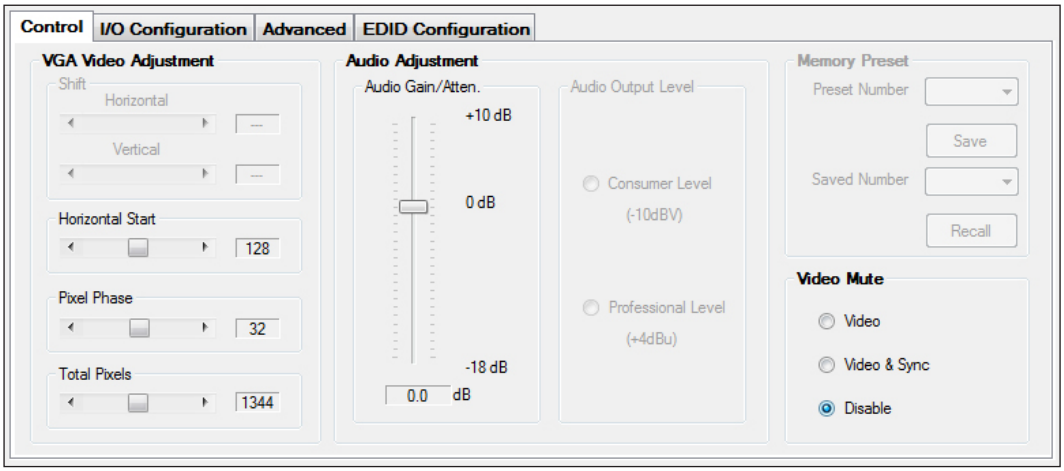


Figure 23. Control Tab

VGA Video Adjustment panel

The `VGA Video Adjustment` panel of the `Control` tab adjusts the following video parameters on the analog input: horizontal start, pixel phase, and total pixels.

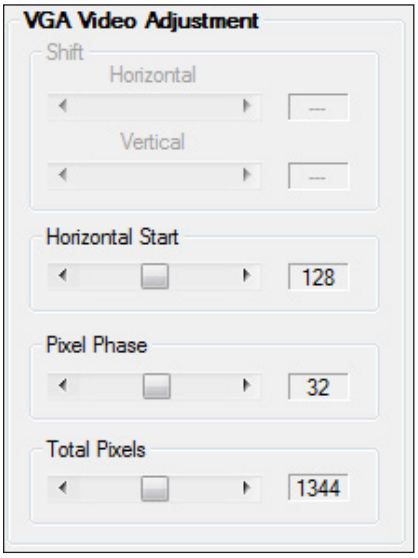


Figure 24. VGA Video Adjustment Panel

Horizontal Start — Defines the number of pixels in the blanking area to the left of the active area.

In the `Horizontal Start` panel of the `VGA Video Adjustment` panel, click the **`Left`** or **`Right`** arrows, or click and drag the slider to adjust the setting to the desired value. The field to the right of a slider shows the current value for the associated setting.

NOTE: The value for Horizontal Start can range between 0 and 255. Default setting: **`128`**.

Pixel Phase — Controls the pixel phase. Sampling at the optimum pixel phase results in a bright, stable output.

In the `Pixel Phase` panel of the `VGA Video Adjustment` panel, click the **`Left`** or **`Right`** arrows, or click and drag the slider to adjust the setting to the desired value. The field to the right of a slider shows the current value for the associated setting.

NOTE: The value for Pixel Phase can range between 0 and 63. Default setting: **`32`**.

The total pixels setting (see below) must be correctly set before adjusting pixel phase.

Total Pixels — Controls the total number of pixels in an active window.

In the `Shift` panel of the `VGA Video Adjustment` panel, click the **`Left`** or **`Right`** arrows, or click and drag the slider to adjust the setting to the desired value. The field to the right of a slider shows the current value for the associated setting.

NOTE: The Total Pixels setting depends on the input rate. It is ±255 of the default value.

Audio Adjustment panel

The `Audio Adjustment` panel of the `Control` tab allows adjusts the gain and attenuation of analog input audio.

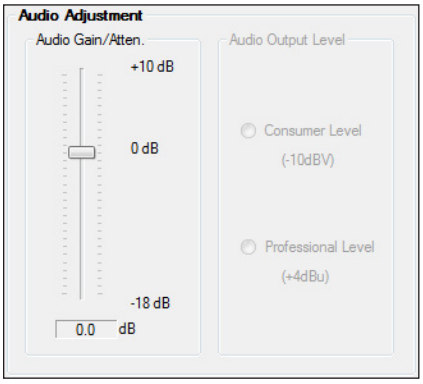


Figure 25. Audio Adjustment Panel

Audio Gain and Attenuation — Adjusts the analog input audio gain or attenuation value. This ranges from -18.0 dB to +10.0 dB in 1.0 dB increments.

In the `Audio Gain/Atten.` panel, click and drag the slider to the desired level. The current value is displayed in a field below the slider control.

Audio Output Level — Is not available for the FOX T USW 203.

I/O Configuration Tab

The `I/O Configuration` tab contains options for input and output settings. To access these options, click the **`I/O Configuration`** tab.

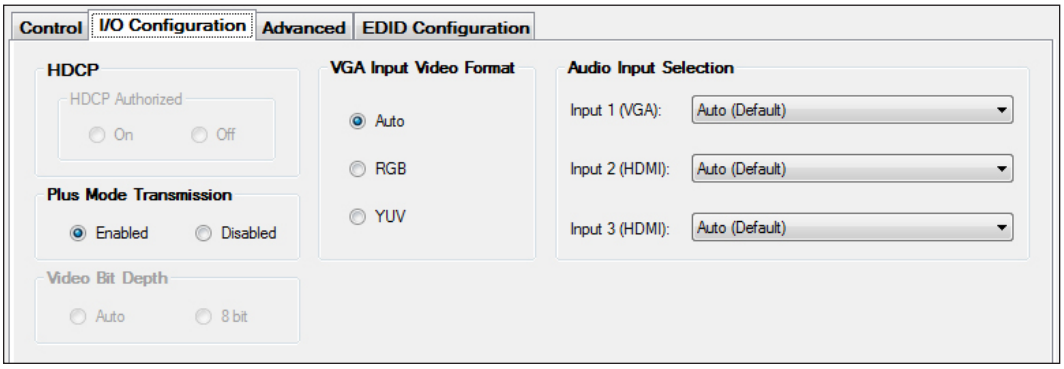


Figure 26. I/O Configuration Tab

HDCP panel

The HDCP Authorized setting allows a user to turn off HDCP communication on discrete inputs. This setting is useful for devices such as Mac computers, iPhones, iPads, and some Windows 7 sources that will always encrypt their output if the downstream sink is capable of HDCP. By not allowing HDCP signals on an input, most content from these sources can be passed as a non-encrypted signal to analog and digital video outputs. In a video system that has requirements to not transmit HDCP encrypted data (such as non-HDMI FOX Extenders), HDCP Authorized should be turned off at the input to keep the non-HDMI FOX Extender's output unencrypted.

In the `HDCP` panel, select the **`On`** radio button to enable the HDCP Authorized setting or select **`Off`** to disable the HDCP Authorized setting.

NOTE: Default setting: HDCP Authorized is **`On`**.

Plus Mode Transmission panel

Plus mode can support rates up to 1920x1200 @ 60 Hz and 2K, with embedded audio, and is HDCP compliant. Non-Plus mode supports rates up to 1600x1200 and 1080p, is HDCP compliant, but does not support audio de-embedding (analog audio is still supported).

In the **Plus Mode Transmission** panel, click the **Enabled** radio button to enable Plus mode. To disable Plus mode, click the **Disabled** radio button.

NOTE: Default setting: Plus Mode is **Enabled**.

VGA Input Video Format panel

This setting selects RGB or YUV input video format for the VGA input.

NOTE: Default setting: VGA input video format is **Auto**.

Audio Input Selection panel

This panel sets the audio type for the VGA and HDMI inputs, or set them to **Auto** for automatic selection.

For each input, select the desired audio input type from the **Input** drop-down list.

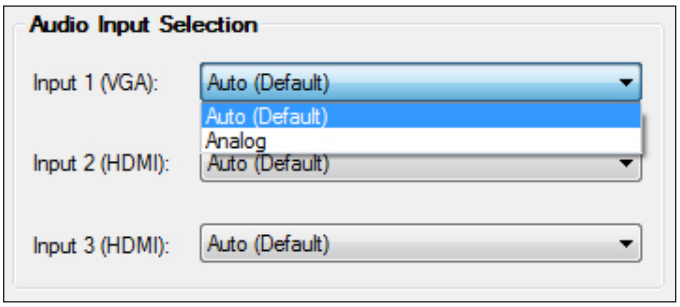


Figure 27. Audio Input 1 Options

NOTE: Default setting: Audio Input Selection is **Auto** for all inputs.

Advanced Tab

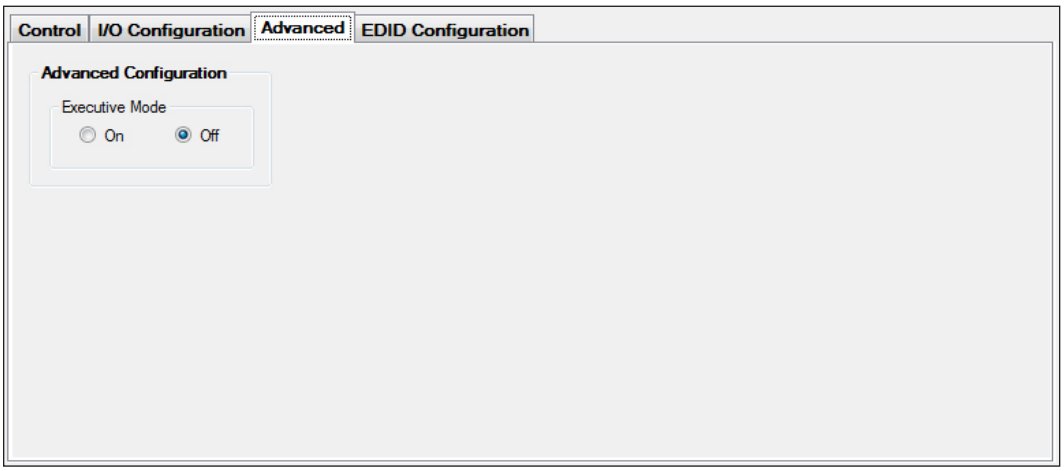


Figure 28. Advanced Tab

Advanced Configuration panel

Executive mode restricts access to the front panel button functions.

To enable or disable executive mode, click either the **On** or **Off** radio button in the **Executive Mode** panel.

NOTE: Turning on executive mode will not disable the ability to control the device with the FOX Extenders Control Program.

EDID Configuration Tab

EDID is a data structure used to communicate video display information, including native resolution and vertical refresh rate requirements, to a source device. The source device then outputs the optimal video format for the display based on the provided EDID data, ensuring proper video image quality.

To access EDID options, click the **EDID Configuration** tab.

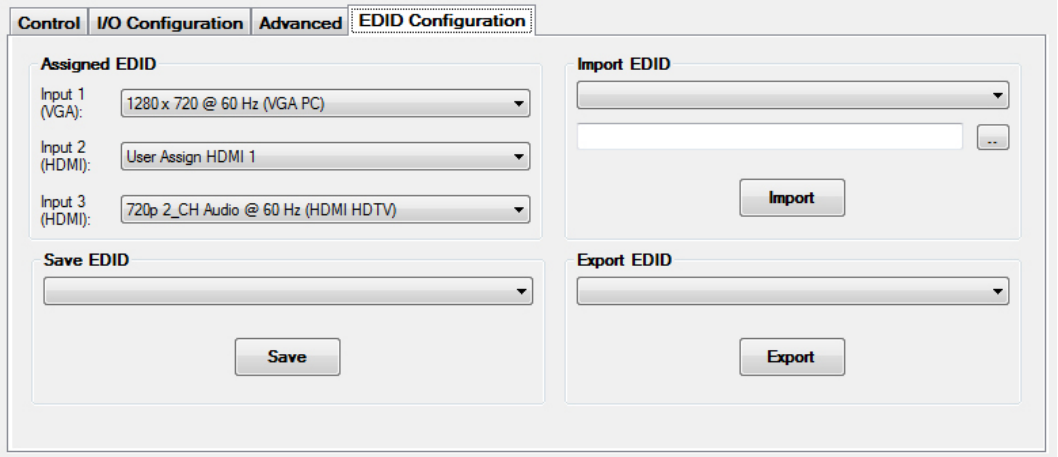


Figure 29. EDID Configuration Tab

Assigned EDID panel

This shows the current EDID configuration for each input. You can assign unique EDID for any input.

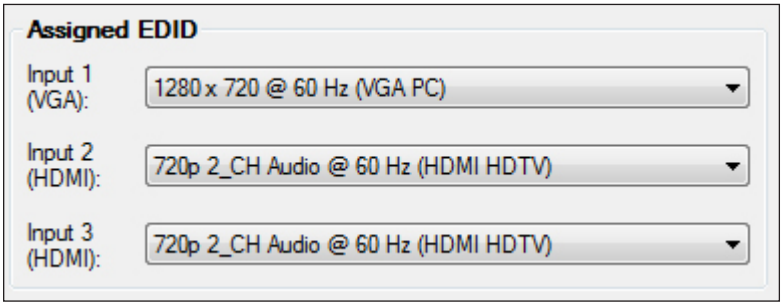

Assigned EDID
Input 1 (VGA):
1280 x 720 @ 60 Hz (VGA PC)
Input 2 (HDMI):
720p 2_CH Audio @ 60 Hz (HDMI HDTV)
Input 3 (HDMI):
720p 2_CH Audio @ 60 Hz (HDMI HDTV)

Figure 30. Assigned EDID Panel

Choose the desired EDID from the drop-down list of the desired input.

NOTE: The default EDID is 720p for the HDMI inputs and 1280x720 for the VGA input.

Save EDID panel

To save EDID from displays that are connected to the VGA Loop-Thru or HDMI Switched Output connector, perform the following:

1. Select **`VGA Loop-Thru EDID`** or the desired **`HDMI Switched Output EDID`** from the drop-down list.

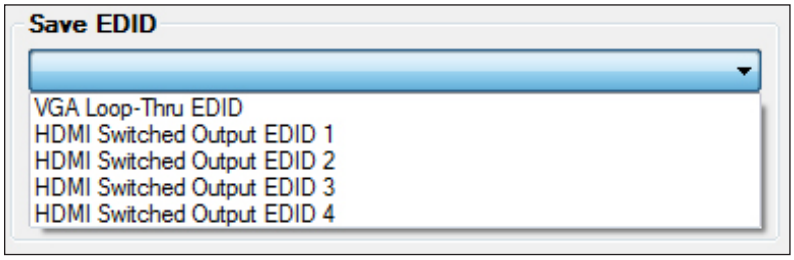

Save EDID
VGA Loop-Thru EDID
HDMI Switched Output EDID 1
HDMI Switched Output EDID 2
HDMI Switched Output EDID 3
HDMI Switched Output EDID 4

Figure 31. Save EDID Options

2. Click the **`Save`** button. The EDID setting is saved.

The saved VGA Loop-Thru and HDMI Switched Output EDID can be assigned to a desired input using the Assign EDID function.

NOTE: There are 4 available memory locations to save digital EDID.

Import EDID panel

EDID files can be imported to the FOX T USW 203 and saved in a table on the device.

NOTE: When an EDID file is imported to a user assigned input location, the EDID is automatically assigned to the selected user input.

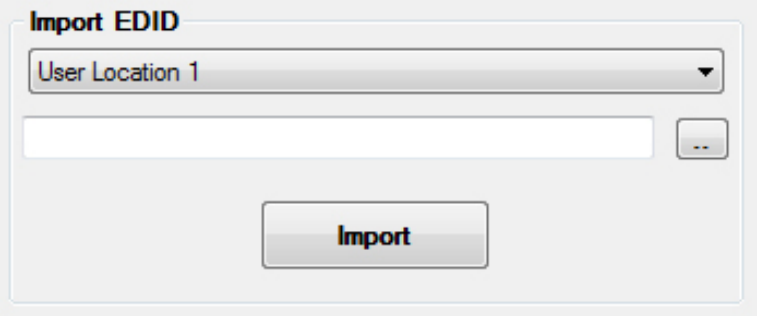


Figure 32. Import EDID Panel

1. In the `Import EDID` panel, from the drop-down list, select the desired input.

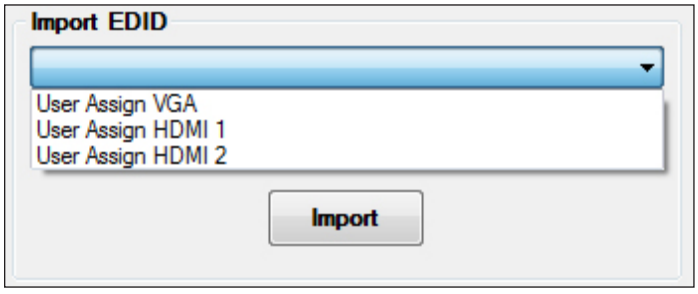


Figure 33. Import EDID Options

2. Click on the **Browse** button to locate and select the desired EDID file on the connected PC. The Open dialog box opens.

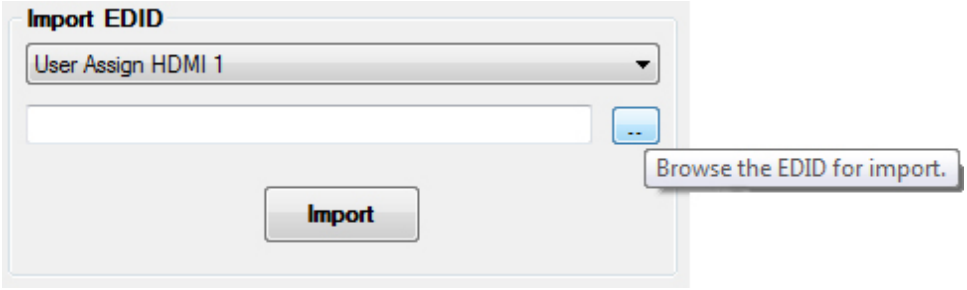


Figure 34. Browse Button for Importing EDID

3. Select the EDID file and click the **Open** button. The Open dialog box closes.
4. Click the **Import** button. The EDID is imported and assigned to the selected input.

Export EDID panel

EDID files on the FOX T USW 203 can be exported to the connected PC. To open and view them, use the Extron EDID Manager software, available at **www.extron.com**.

The EDID Manager software aids in troubleshooting any EDID related issues that may occur during configuration or operation of an AV system.

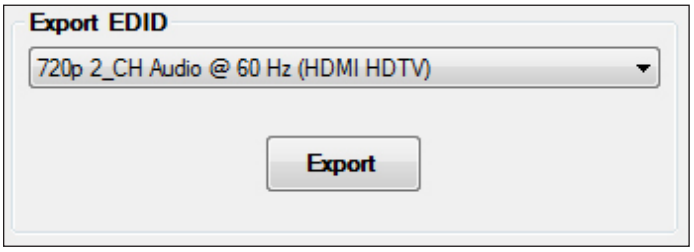


Figure 35. Export EDID Panel

1. In the Export EDID panel, select the desired EDID to export from the drop-down list.
2. Click the **Export** button. The Save As dialog box opens.
3. Select the export destination and file name for the EDID.
4. Click the **Save** button. The EDID setting is exported.

Reference Information

This section contains mounting and firmware updating information. Topics in this section include:

- **Mounting**
- **Updating Firmware**

Mounting

The FOX T USW 203 can be placed on a tabletop or mounted in a rack or underneath a desk.

Tabletop Use

Attach the provided rubber feet to the bottom four corners of the enclosure.

Mounting Kits

Mount the unit using any optional compatible mounting kit listed on the Extron website in accordance with the directions included with the kit. For rack-mounting, see the UL guidelines for rack-mounted devices below.

UL guidelines for rack-mounted devices

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the FOX T USW 203 in a rack.

1. **Elevated operating ambient temperature** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature, Therefore, install the FOX T USW 203 in an environment compatible with the maximum ambient temperature (Tma = +122 ˚F, +50 ˚C) specified by Extron.
2. **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is no compromised.
3. **Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.
4. **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have an overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Updating Firmware

To update firmware for the FOX T USW 203, download the new firmware to a connected computer and upload the firmware with the Firmware Loader utility or the FOX Extenders Control Program (see to the *FOX Extenders Control Program Help File*).

Downloading Extron Firmware Loader

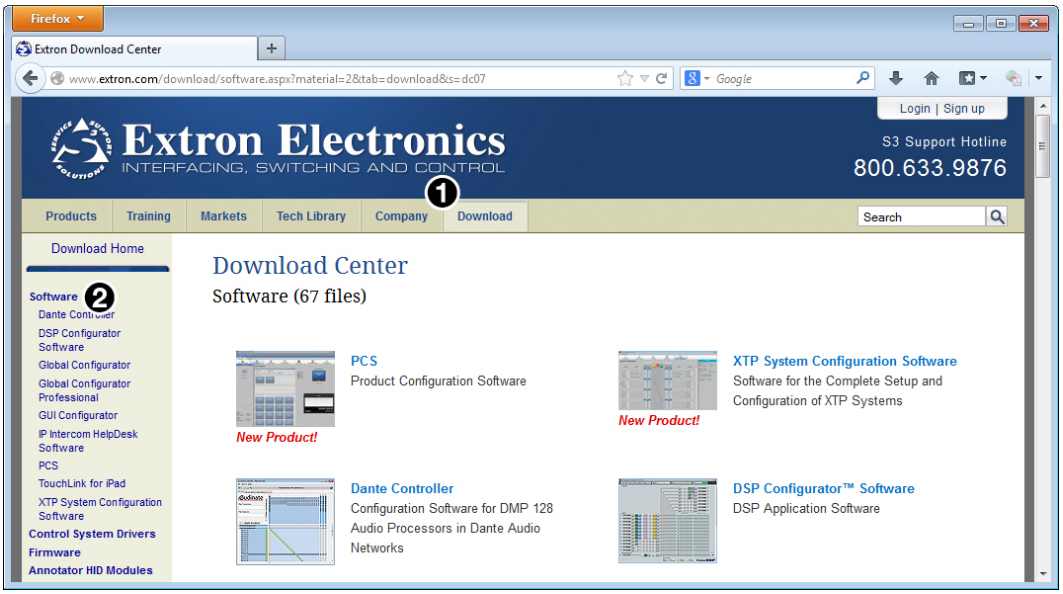


Figure 36. Software Download Page on the Extron Website

1. On the Extron **website**, click the **`Download`** tab (see figure 36, ❶).
2. From the left sidebar, click the **`Software`** link (see figure 36, ❷).

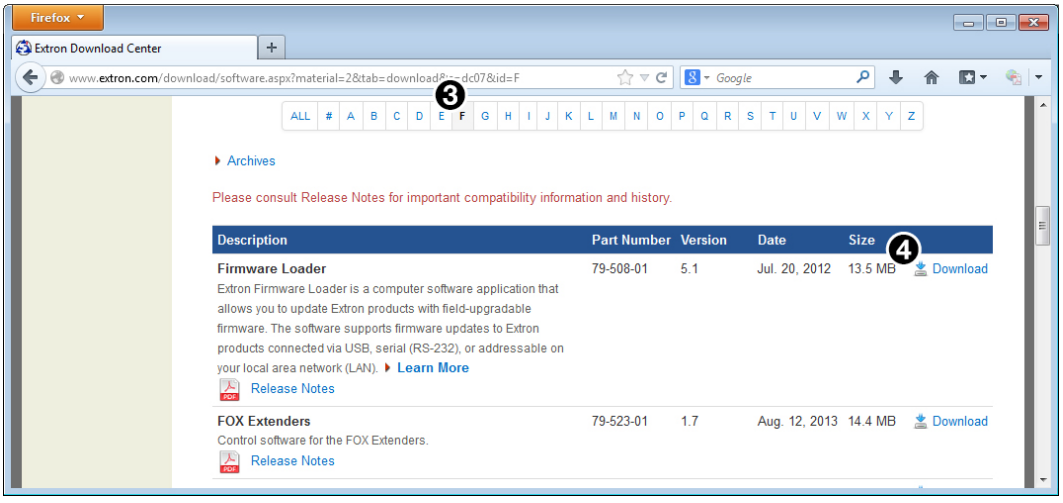

Extron Download Center
ALL # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
3
Archives
Please consult Release Notes for important compatibility information and history.
Description
Part Number
Version
Date
Size
4
Firmware Loader
79-508-01
5.1
Jul. 20, 2012
13.5 MB
Download
Extron Firmware Loader is a computer software application that allows you to update Extron products with field-upgradable firmware. The software supports firmware updates to Extron products connected via USB, serial (RS-232), or addressable on your local area network (LAN).
Learn More
Release Notes
FOX Extenders
79-523-01
1.7
Aug. 12, 2013
14.4 MB
Download
Control software for the FOX Extenders.
Release Notes

Figure 37. Firmware Loader Download on the Extron Website

3. Navigate to `Firmware Loader` (see figure 37, ❸).
4. Click the **`Download`** link (❹) on the right that corresponds with the program.
5. Submit any required information to start the download.

Installing Firmware Loader

1. Once Firmware Loader has been downloaded, run the .exe file from the save location. The installation wizard window opens.
2. Click **`Next`** to continue through the process, filling out necessary information and specifying custom settings on each prompt.

Downloading Firmware

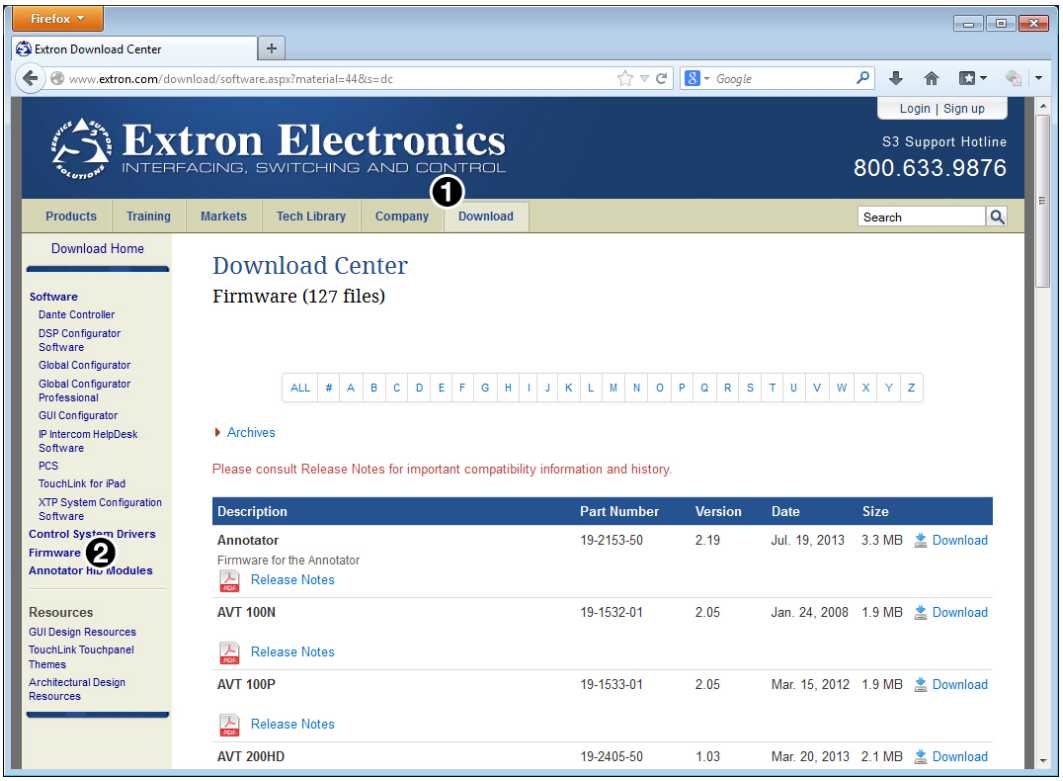


Figure 38. Downloading Firmware from the Extron Website

1. On the Extron **website**, click the **`Download`** tab (1).
2. From the left sidebar, click the **`Firmware`** link (2).
3. Navigate to `FOX T USW 2Ø3`.
4. Ensure the available firmware version is a later version than the current one on the device.

   NOTE: The firmware release notes are in a PDF file that provides details about the changes between different firmware versions. The file can be downloaded from the same page as the firmware on the Extron **website**.

5. Click the **`Download`** link to the right of the desired device.
6. Submit any required information to start the download. Note where the file is saved.
7. Open the executable (.exe) file.
8. Follow the instructions on the Installation Wizard screens to install the new firmware on the computer. A Release Notes file, giving information on what has changed in the new firmware version, and a set of instructions for updating the firmware are also loaded.

Installing Firmware with Firmware Loader

1. Open Firmware Loader to establish a connection between the computer and the device. The `Add Device...` dialog box opens.

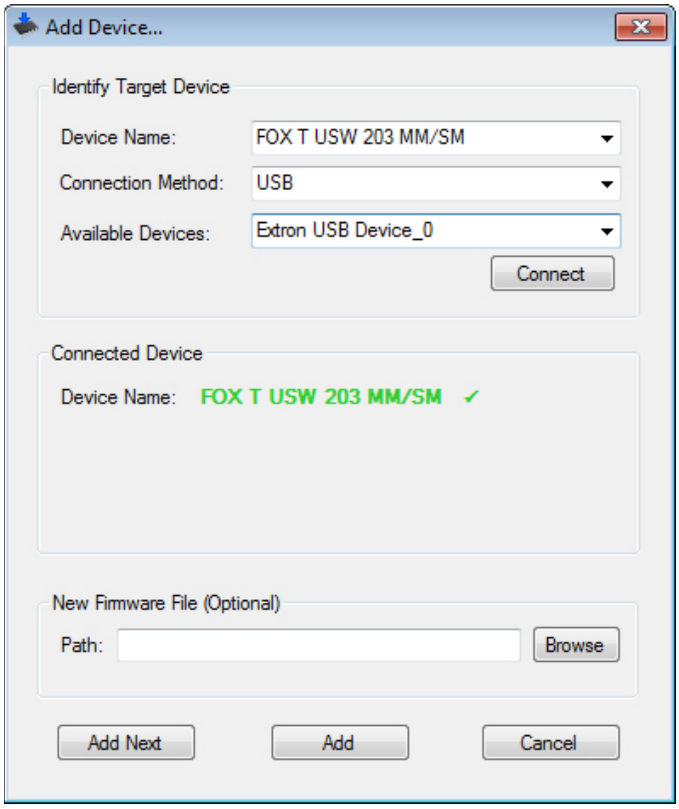


Figure 39. Add Device... Dialog Box (Connected through USB)

2. Select **`FOX T USW 203`** from the **`Device Name`** drop-down list.
3. Select the method of connection from the **`Connection Method`** drop-down list.
4. Depending on the connection method, additional options appear. Make the appropriate selections for the current connection method.
5. Click **`Connect`**.
6. Click **`Browse`** in the `New File Firmware (Optional)` panel. The `Open` window opens.
7. On the `Open` window, navigate to the new firmware file, which has an .S19 extension, and click **`Open`**.

ATTENTION: Valid firmware files must have the file extension .S19. A file with any other extension is not a firmware upgrade for this device and could cause the device to stop functioning.

ATTENTION : Les fichiers firmware valides doivent contenir l'extension fichier S19. Un fichier avec n'importe quelle autre extension n'est pas une mise à jour de firmware pour cet appareil et l'appareil pourrait arrêter de fonctionner.

8. Click **`Add`**. The `Add Device...` dialog box closes and the device and firmware are listed in the Firmware Loader main window.
9. Click **`Begin`** to start the upload process.
10. Close Firmware Loader when the **`Remaining Time`** field shows `00.00.00`, the **`Progress`** column shows `100%`, and the **`Status`** field shows `completed` (see **Factory reset** SIS commands on page 20 for reset information).

Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:
Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

Japan:
Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

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3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:
Extron Asia Pte Ltd
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

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NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: 714.491.1500 or 800.633.9876 **Europe**: 31.33.453.4040
Asia: 65.6383.4400 **Japan**: 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

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Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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